

Review of the North American Genus *Araeolepia* (Lepidoptera: Plutellidae)¹

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Abstract.—Generic and specific characters of the monobasic North American genus *Araeolepia* and the species *A. subfasciella* Walsingham are described and illustrated. The distribution covers Washington to California, Nevada and Utah. Characters align the genus to Plutellidae. The immature stages are unknown.

The genus *Araeolepia* Walsingham was described (Walsingham, 1881) for the single species *A. subfasciella* Walsingham. This review illustrates adult characters not previously described and documents the known distribution of this rare species. The biology and immature stages are not known. The single species of *Araeolepia* was originally described from Oregon, but since Walsingham's day the known distribution (Fig. 12) has been found to include Washington, Nevada, Utah, and eastern California.

The immature characters may hold the key to a more certain family placement for *Araeolepia*. Adult characters of head morphology and wing venation indicate a placement in Plutellidae (Heppner, 1978). In discussing the genus *Ellabella* (Copromorphidae), it was also noted that the resemblance between *Araeolepia* and *Ellabella* in genital characters still makes family placement of *Araeolepia* somewhat questionable (Heppner, 1984). The wing venation, however, conforms more to Plutellidae (e.g., distinct chorda and hind wing cubital veins widely spaced) than to Copromorphidae. As noted for *Ellabella* (Heppner, 1984), the Plutellidae and Yponomeutidae require complete generic revision on a world basis to redefine family limits and assess generic affinities.

Araeolepia Walsingham

Araeolepia Walsingham, 1881:303 (Type-species.—*Araeolepia subfasciella* Walsingham, 1881, by monotypy). Riley, 1891:98; Dyar, [1903]:490; Kearfott, 1903:107; Barnes and McDunnough, 1917:182; Busck, 1925:46; McDunnough, 1939:84; Heppner, 1978:51; 1982:240, 278; 1984:50.

Diagnosis.—Head (Figs. 1, 3): Vertex vestiture somewhat roughened; ocelli present; antenna filiform; labial palpus upturned straight to somewhat porrect (curved at base); maxillary palpus (Figs. 2, 4) 4-segmented; haustellum well developed, unscaled.

Thorax: legs normal; epiphysis present; tympanal organ absent.

Forewings (Fig. 5) elongate, with acute apex and oblique termen; Sc to midwing;

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Figures 1, 2. Head morphology of *Araeolepia subfasciella* Walsingham. 1, Head profile (USNM 77336, Washington) (scale = 1.0 mm). 2, Same, detail of haustellum base, maxillary palpus, and pilifer (scale = 0.1 mm).

R1 to $\frac{2}{3}$ from base; radial veins free, with R4 before apex, R5 below apex; chorda present; pterostigma absent (?); median veins free, equidistant from cell, fairly parallel; CuP at margin, fold evident; A_{1+2} with average basal fork.

Hindwings elongate, somewhat shorter than forewings but broader; apex acute; termen oblique; Sc to $\frac{3}{4}$ from base; Rs free to near apex; median veins free, equidistant; CuA_1 distant from CuA_2 near end of cell, parallel; CuP at margin, fold evident; A_{1+2} with small fork; A_3 long.

Male genitalia: uncus and gnathos present; transtilla present; anellus semicircular with median projection; valvae reduced to enlarged sacculus; ampulla at valval base; vinculum with small saccus; tegumen broad to base of uncus.

Female genitalia: ovipositor average length (segment 8–10 subequal to 7); posterior apophyses long (=ostium to posterior end); anterior apophyses half as long, stout; ostium simple, membranous, merging into ductus bursae which is convoluted into several curls before merging into bursa; corpus bursae ovate; signum a spined spot.

Immature stages.—Unknown.

Araeolepia subfasciella Walsingham

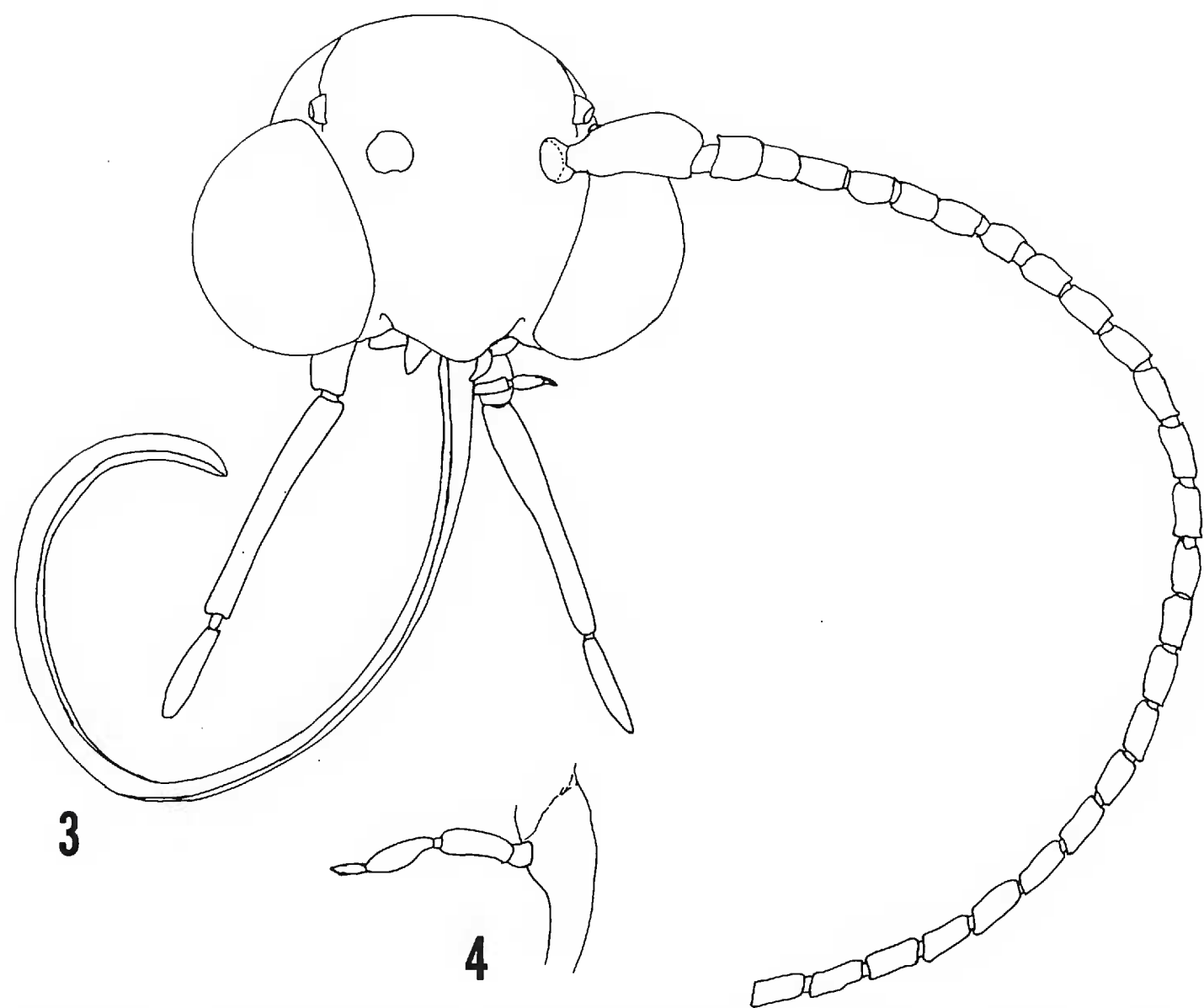
Araeolepia subfasciella Walsingham, 1881:303.

Diagnosis.—Forewing length: 9.2–10.5 mm (♂), 7.5–9.2 (♀).

Male.—Head: white, with dark brown or black scales as median line; most of frons dark brown or black; antennae brown or black; labial palpus black except for white on apical and basal segments; median segment ca. $2\times$ apical segment.

Thorax: mixed black and white; venter white mixed with some black; legs mostly black with white highlights.

Forewing (Fig. 6): white speckled with dark brown or black; three large black areas at midwing, quadratic or triangular and surrounded by brown mixed with white, beyond which is all white mixed with black; dark areas often edged with white; usually an irregular white line at end of discal cell and bordering the most



Figures 3, 4. Head morphology of *Araeolepia subfasciella* Walsingham. 3, Head frontal view (USNM 77715, Nevada). 4, Same, detail of maxillary palpus and haustellum.

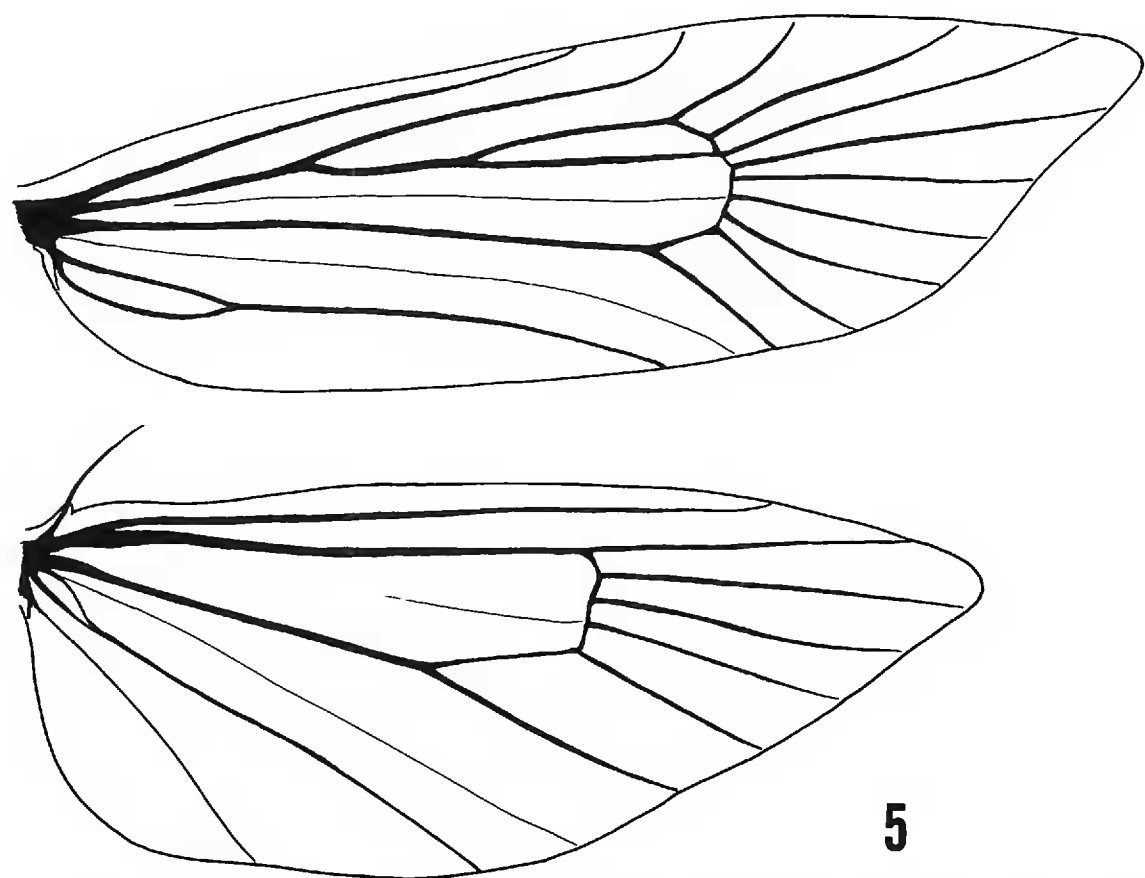
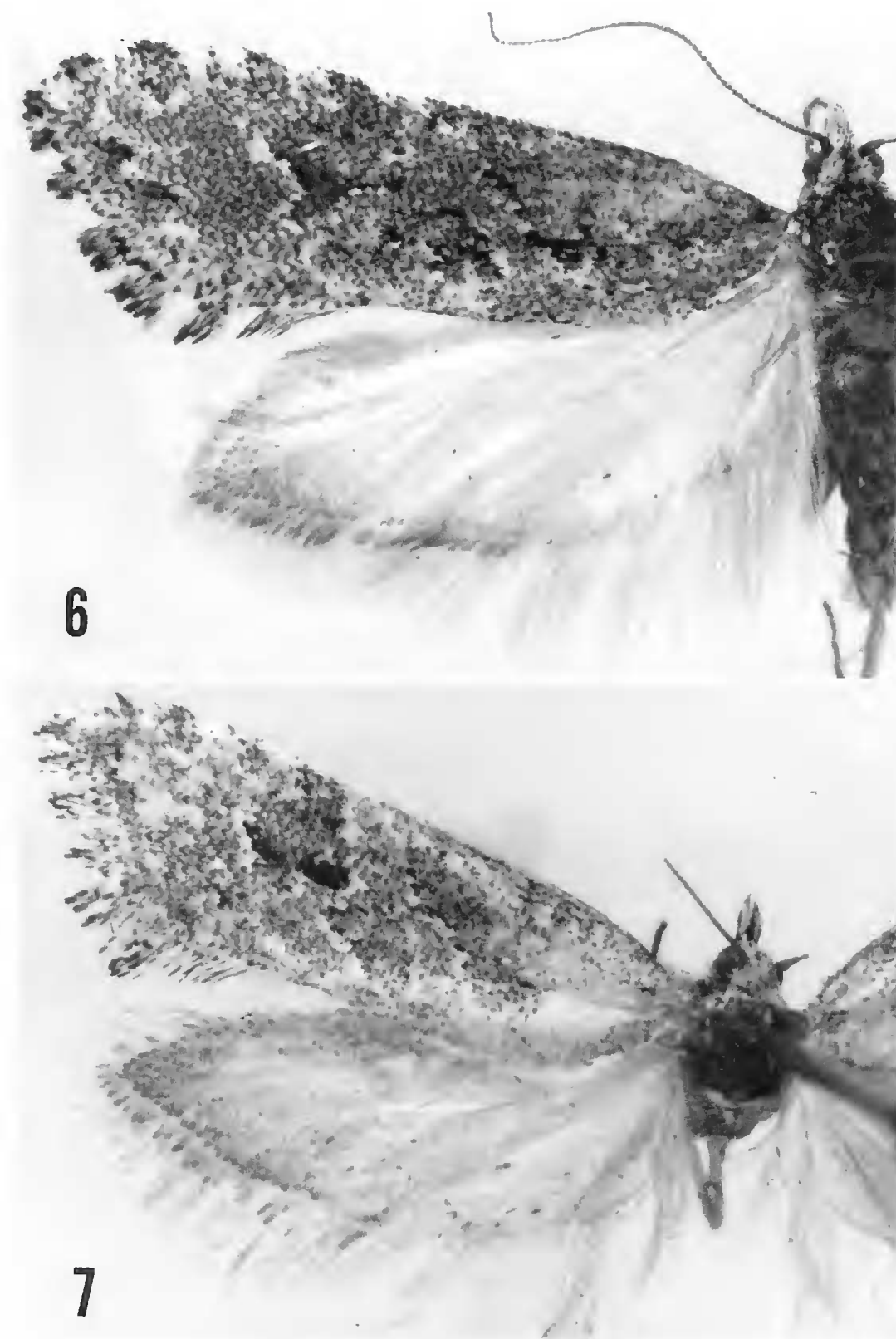


Figure 5. Wing venation of *Araeolepia subfasciella* Walsingham (USNM 77112, Utah).



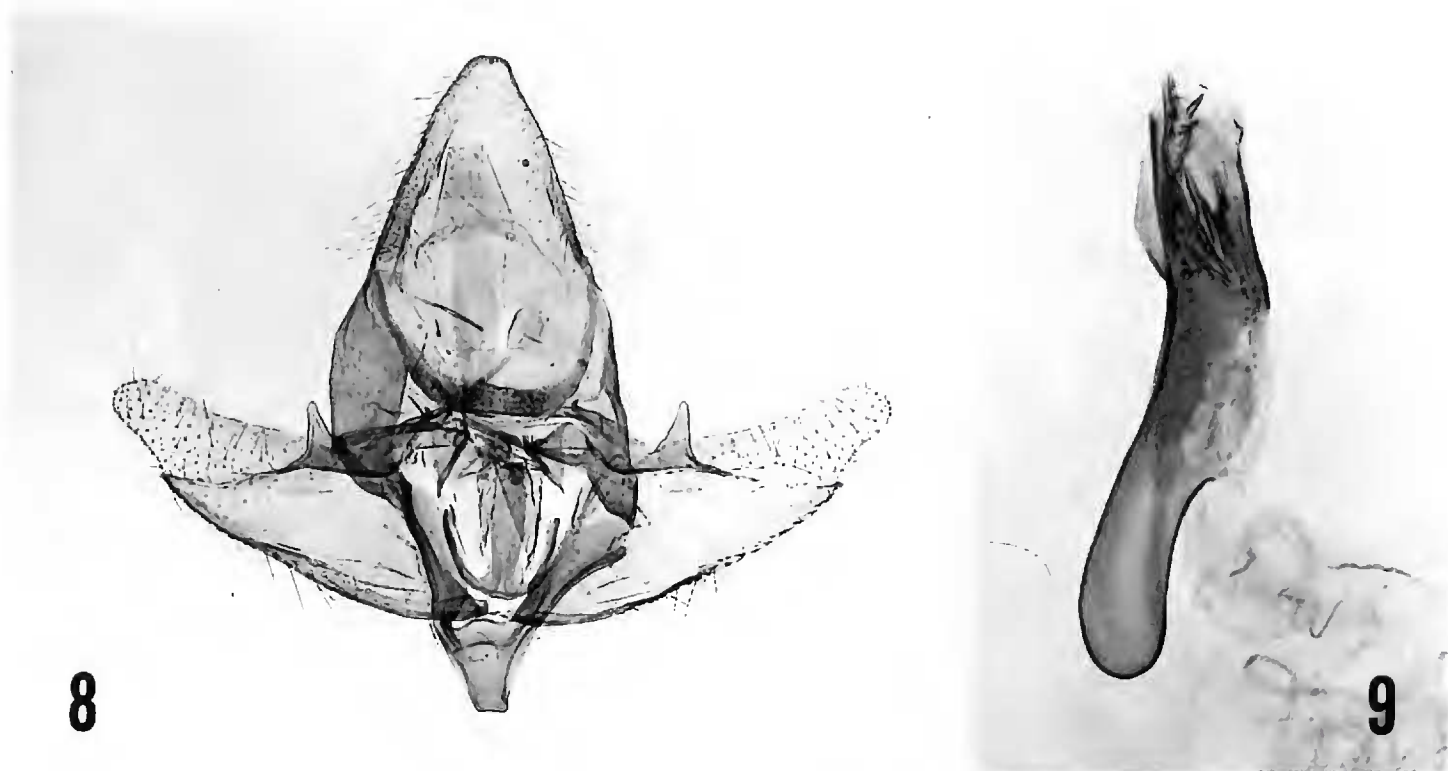
Figures 6, 7. Adults of *Araeolepia subfasciella* Walsingham. 6, ♂, Washington (USNM). 7, ♀, Nevada (USNM).

distal of the three black areas; another more indistinct zigzag subterminal white line; costal margin near apex with 4–5 white marks; fringe black and white; venter gray brown.

Hindwing: uniform pale gray-brown, whiter towards bases; fringe white; venter as dorsal surface.

Abdomen: dark brown with white line at posterior of each segment; venter similar.

Male genitalia (Fig. 8): uncus a broad triangle, with setaceous edges and ventrum; tegumen as wide as uncus base; gnathos a curved semi-circle with scrobations on distal end; transtilla long and thin, with short hook on either end near valval



Figures 8, 9. Male genitalia of *Araeolepia subfasciella* Walsingham. 8, Nevada (USNM 77113). 9, Same, detail of aedeagus (enlarged).

base; valva small with reduced setaceous apex and large sacculus, with an upturned median point; ampulla near base as extension of dorsal basal area; anellus semi-circular, thin, with a central flattened projection; vinculum with short saccus; aedeagus (Fig. 9) with large phallobase and numerous short cornutal spines.

Female (Fig. 7).—Similar to male.

Female genitalia (Fig. 10): ovipositor as for genus; sternal plate formed by anterior apophyses on segment 8; posterior apophyses elongated; anterior apophyses shorter, stout; ostium a simple funnel to convoluted ductus bursae, with several turns; ostium bursae with small sclerotized collar near ostium; ductus seminalis from near collar; corpus bursae with small signum (Fig. 11) bearing numerous inwardly directed spines.

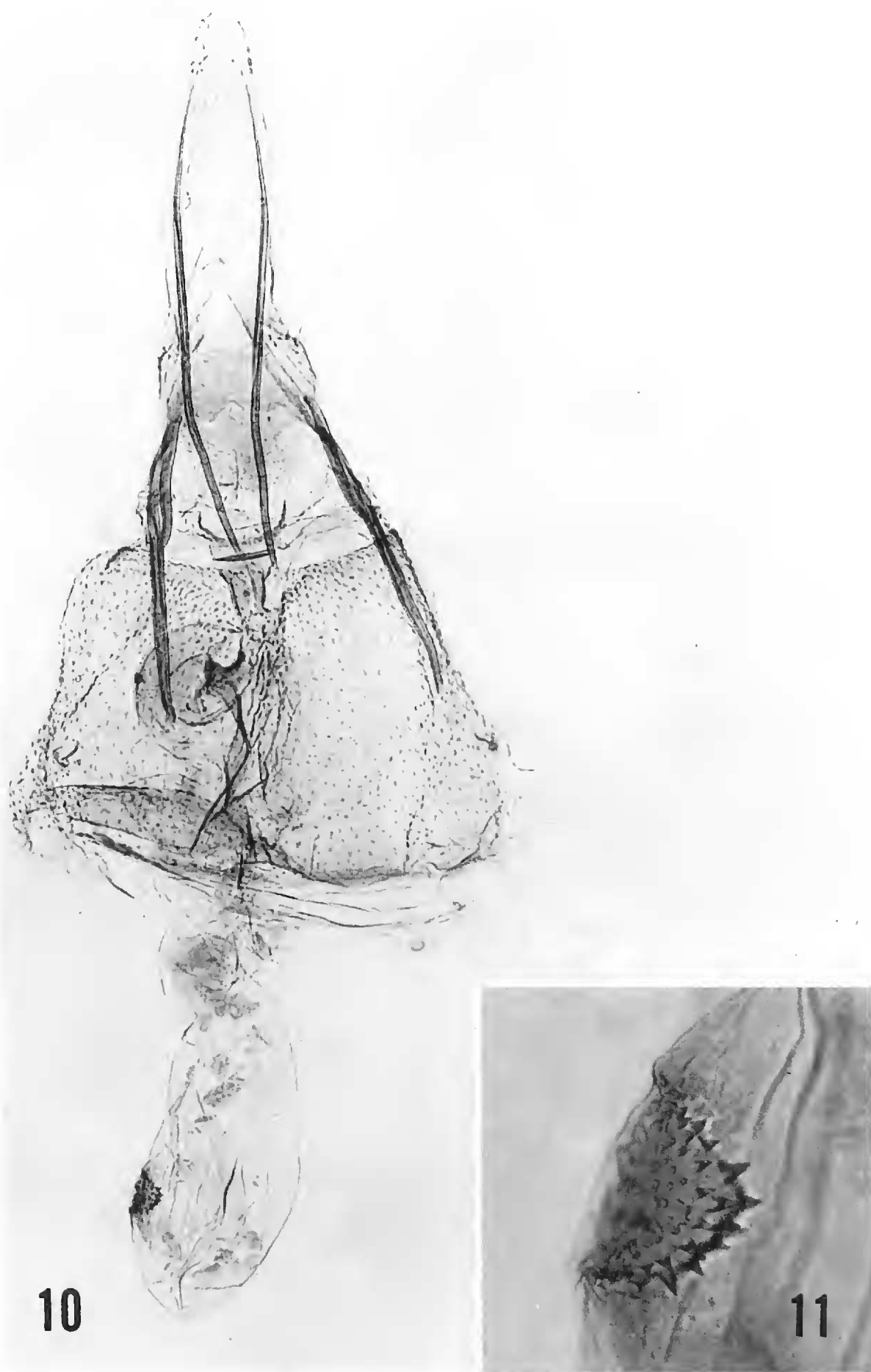
Host.—Unknown.

Distribution.—Washington, Oregon, Nevada, Utah, eastern California (Fig. 12).

Flight period.—April–June.

Type.—Lectotype ♂ (BMNH): Currant Creek [Jefferson Co.], Oregon, 16 Apr 1872, T. de G. Walsingham. (Lectotype designated by Heppner, 1982:278.)

Material examined.—(21 ♂, 21 ♀). CALIFORNIA, Inyo Co.: Lone Pine, 4-V-1940 (1 ♀), E. C. Johnston (CNC). NEVADA, Humboldt Co.: Paradise Vy., 27-V-1974 (1 ♀), 23-VI-1974 (1 ♀), J. F. G. Clarke (USNM). Washoe Co.: Verdi, 1-10-VI (1 ♂, 6 ♀—USNM; 1 ♀—ANSP; 1 ♀—MCZ), 20-30-VI (1 ♀—USNM) [no year], A. H. Vachell. OREGON, Jefferson Co.: Currant Cr., 16-IV-1872 (4 ♂, 2 ♀—BMNH; 4 ♂—USNM; 1 ♂—MCZ), Walsingham [paralectotypes]. Lane Co.: Eugene [no date (prob. 1872)], (2 ♂), Walsingham (BMNH). Wasco Co.: Maupin, 17-IV-1942 (1 ♀), E. C. Johnston (CNC). UTAH, Utah Co.: Vineyard, 22-IV-1919 (2 ♂), 28-IV-1912 (1 ♀), 29-IV-1919 (1 ♂, 1 ♀), 1-V-1919 (1 ♀), 14-V-1912 (1 ♂), T. Spalding (USNM); 29-IV-1919 (♀), T. Spalding (LACM). WASHINGTON, Chelan Co.: Wenatchee, 9-IV-1931 (3 ♂), J. F. G. Clarke (USNM). Okanogan



Figures 10, 11. Female genitalia of *Araeolepia subfasciella* Walsingham. 10, Nevada (USNM 77114). 11, Same, detail of signum.

Co.: Brewster, 3-V-1947 (1 ♀), E. C. Johnston (CNC). Yakima Co.: Satus Cr., 4-IV-1942 (1 ♂), E. C. Johnston (CNC). Tieton, 12-V-1931 (1 ♀), F. Dean (USNM).

Remarks.—There are several Plutellidae of the genus *Ypsolopha* in western North America that superficially resemble *Araeolepia subfasciella*. The wing mac-

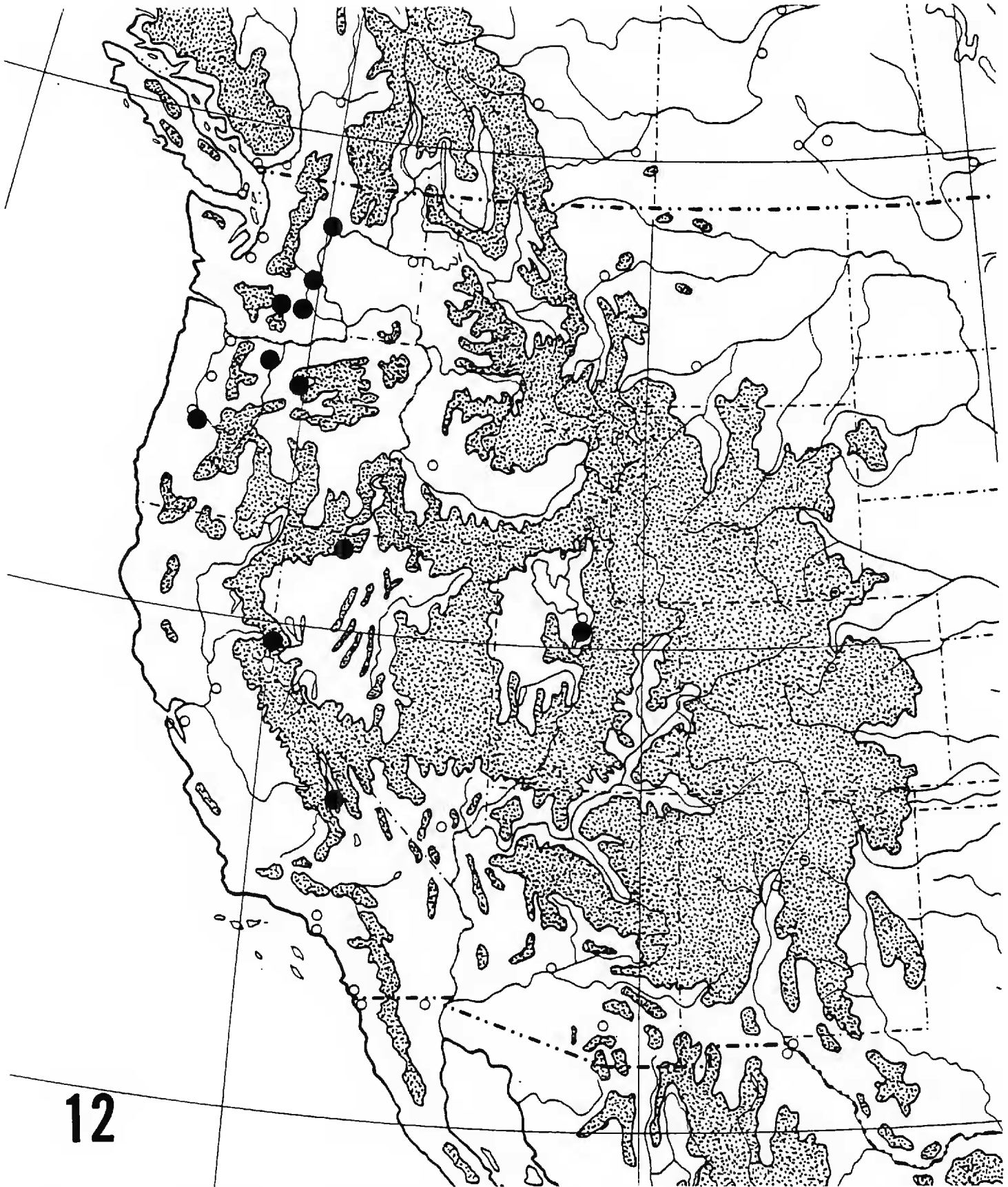


Figure 12. Distribution of *Araeolepia subfasciella* Walsingham. (Shaded areas represent elevations above 1500 m.)

ulation, however, will distinguish *A. subfasciella* when carefully compared with the descriptions and illustrations provided herein. The genitalia of *A. subfasciella* are very different from any *Ypsolopha*. *Araeolepia subfasciella* appears to be primarily a Great Basin species, going beyond this region only in Oregon and Washington. The relatively early flight period may account for the paucity of records, since fewer collectors are in the field in early spring.

ACKNOWLEDGMENTS

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LITERATURE CITED

- Barnes, W., and J. H. McDunnough. 1917. Check list of the Lepidoptera of boreal America. Herald Press, Decatur, Illinois, 392 pp.
- Busck, A. 1925. A new North American genus of microlepidoptera (Glyphipterygidae). Proc. Ent. Soc. Washington, 27:46-48, pl. 3 (*Ellabella*).
- Dyar, H. G. [1903]. A list of North American Lepidoptera and key to the literature of this order of insects. Bull. United States Natl. Mus., 51:1-723 (1902).
- Heppner, J. B. 1978. Transfers of some Nearctic genera and species of Glyphipterigidae (*auctorum*) to Oecophoridae, Copromorphidae, Plutellidae, and Tortricidae (Lepidoptera). Pan-Pac. Ent., 54:48-55.
- . 1982. A world catalog of genera associated with the Glyphipterigidae auctorum (Lepidoptera). J. New York Ent. Soc., 89:220-294 (1981).
- . 1984. Revision of the Oriental and Nearctic genus *Ellabella* (Lepidoptera: Copromorphidae). J. Res. Lepid., 23:50-73.
- Kearfott, W. D. 1903. Tineoidea. In J. B. Smith, Check list of the Lepidoptera of boreal America, 2nd ed. Amer. Ent. Soc., Philadelphia, 136 pp.
- McDunnough, J. H. 1939. Checklist of the Lepidoptera of Canada and the United States of America. Part II. Microlepidoptera. Mem. S. California Acad. Sci., 2:1-171.
- Riley, C. V. 1891. Tineina. In J. B. Smith, List of the Lepidoptera of boreal America. Amer. Ent. Soc., Philadelphia, 124 pp.
- Walsingham, T. de G. 1881. On some North American Tineidae. Proc. Zool. Soc. London, 1881: 301-325, pls. 35-36.